IN THE CLAIMS

21. (currently amended) An optical transmitter comprising:

an array having at least one semiconductor laser;

a memory for storing a plurality of drive waveform parameters; and

a driver circuit, coupled to the memory and the array, for receiving data signals and at least one drive waveform parameter, and responsive thereto, for generating at least one drive waveform to drive the semiconductor laser; wherein the drive waveform includes a negative peak portion;

wherein the drive waveform parameters includes at least one parameter for affecting the negative peak portion of the drive waveform.

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22. (previously presented) The optical transmitter of claim 21 wherein the array includes a plurality of semiconductor lasers, each of the plurality of semiconductor lasers associated with its own set of drive waveform parameters;

wherein the driver circuit generates an individual drive waveform for each semiconductor laser based on the set of drive waveform parameters associated with that semiconductor laser for increasing the uniformity in the resulting optical waveforms of the semiconductor lasers; and

wherein the driver circuit updates at least one drive waveform parameter during the operation of the transmitter based on one of an aging factor of the array and a temperature factor of the array and generates an updated drive waveform based on the updated drive waveform parameter.

23. (previously presented) The optical transmitter of claim 21 wherein the memory stores the dc properties and the ac properties for each semiconductor laser in the array for different age factors and temperature factors; and wherein the driver

circuit generates a drive waveform for each semiconductor laser based on the dc properties and ac properties for that semiconductor laser.

24. (previously presented) The optical transmitter of claim 21 wherein the driver circuit includes an integrated digital controller and a temperature sensor for sensing the temperature of the driver circuit; and wherein the integrated digital controller selectively updates the drive waveform parameters based on the temperature of the driver circuit.

25. (previously presented) The optical transmitter of claim 21 wherein the driver circuit includes an integrated digital controller having a timer function for periodically adjusting at least one drive waveform parameter to compensate for aging of the semiconductor laser.

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26. (previously presented) The optical transmitter of claim 21 wherein the array includes a 1 x N array of semiconductor lasers.

27. (previously presented) The optical transmitter of claim 26 wherein the semiconductor laser is a vertical cavity surface emitting laser (VCSEL).

28. (previously presented) The optical transmitter of claim 21 wherein the memory includes a nonvolatile memory for storing one of bias current parameter, modulation current parameter, negative peaking depth parameter, and negative peaking duration parameter for each semiconductor laser in the array.

29. (currently amended) A laser driver for generating drive waveforms that drives an array having at least one semiconductor laser comprising:

a storage for storing a plurality of drive waveform parameters;

a digital controller coupled to the storage for initially accessing a first set of drive waveform parameters that correspond to a first semiconductor laser and subsequently accessing the memory for other sets of drive waveform parameters corresponding to the first semiconductor laser based on one of an age factor and a temperature factor; and

a waveform shaping circuit coupled to the digital controller for receiving the set of drive waveform parameters and responsive thereto for generating a drive waveform that is dependent on the set of drive waveform parameters; wherein the waveform includes ~~ac characteristics~~ a negative peaking portion; and wherein the drive waveform parameters includes at least one parameter for affecting the ~~ac characteristics~~ negative peaking portion of the drive waveform.

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30. (currently amended) The laser driver of claim 29 further comprising:

an aging compensation mechanism for monitoring the age of the laser and for providing an age factor for use in selecting a set of drive waveform parameters from ~~memory~~ the storage to be utilized in generating a drive waveform that compensates for the aging of the laser.

31. (currently amended) The laser driver of claim 29 further comprising:

a temperature compensation mechanism for monitoring the temperature of the driver and for providing a temperature factor for use in selecting a set of drive waveform parameters from the ~~memory~~ storage to be utilized in generating a drive waveform that compensates for the changes in temperature of the laser.

32. (previously presented) The laser driver of claim 29 wherein the drive waveform parameters includes

at least one dc parameter and at least one ac parameter.

33. (currently amended) The laser driver of claim 29 wherein the drive waveform parameters associated with the drive waveform include one of

bias current, modulation current, negative peaking depth, and negative peaking duration.

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34. (currently amended) The laser driver of claim 29 further comprising:

a digital to analog converter for receiving the drive waveform parameters in digital form and responsive thereto for generating ~~the~~ corresponding drive waveform parameters in analog form; and

wherein the drive waveform parameters in analog form are provided to the ~~a~~ waveform shaping circuit.

35. (previously presented) The laser driver of claim 29 wherein the laser driver is suitable for driving a single vertical cavity surface emitting laser (VCSEL) or an array of vertical cavity surface emitting lasers (VCSELs).

36. (currently amended) A method for providing a drive waveform that includes ac characteristics for at least one semiconductor laser in a laser driver, the laser driver including an integrated controller and a storage for storing a plurality of drive waveform parameters, the method comprising the steps of:

providing a first set of drive waveform parameters for a first laser; and

generating a drive waveform for driving the first laser based on the first set of waveform parameters;

adjusting the first set of drive waveform parameters during the operation of the laser driver based on one of a temperature factor and an aging factor; and

generating an updated drive waveform for driving the first laser based on the adjusted drive waveform parameters;

wherein the waveform includes a negative peaking portion; and

wherein the drive waveform parameters ~~can include a~~ includes at least one parameter for affecting the ~~ac characteristics~~ negative peaking portion of the drive waveform.

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37. (previously presented) The method of claim 36 wherein the drive waveform parameters in the storage are organized by laser, temperature factor, and age factor; and wherein adjusting the parameter during the operation of the laser driver includes retrieving at least one updated drive waveform parameter from the storage based on the operating temperature of the semiconductor laser.

38. (previously presented) The method of claim 36 wherein the drive waveform parameters in the storage are organized by laser, temperature factor, and age factor; and wherein adjusting the parameter during the operation of the laser driver

includes periodically retrieving at least one updated drive waveform parameter from the storage based on the age of the semiconductor laser.

39. (currently amended) The method of claim 36 wherein providing a first set of drive waveform parameters for a first laser includes one of:

prior to operation of the first laser,

digital programming of a bias current parameter;

digital programming of a modulation current parameter;

digital programming of a negative peaking depth parameter during an optical one to optical zero transition; and

digital programming of a negative peaking duration parameter during an optical one to optical zero transition.

40. (previously presented) The method of claim 36 wherein adjusting the drive waveform parameters during the operation of the laser driver based on one of a temperature factor and an aging factor includes one of:

digital programming of an updated bias current parameter;

digital programming of an updated modulation current parameter;

digital programming of an updated negative peaking depth parameter during an optical one to optical zero transition; and

digital programming of an updated negative peaking duration parameter during an optical one to optical zero transition.